Languages and multimedia: Dream or nightmare?

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The stampede is on. As the CAUT grants are showing, multimedia is everywhere, either as teaching material on a CD-ROM, or as the more distant prospect of interactive multimedia (IMM) on the Net. Part of the drive may be fashion and part the desire not to appear behind the times to computer-literate students, but the main elements seem to be cost savings, flexible delivery, and the renewal of teaching.

Science and mathematics are prominent players, but the languages, too, are in the thick of developments which have grown markedly over the past decade since the founding of ASCILITE to the point where last December's conference was the occasion for a rich variety of papers (Pearce 1995). For the languages, the question is whether the new technology is the start of a long awaited revolution in teaching and learning or merely a still more expensive version of the language laboratories which never quite lived up to their promise of ushering in a new era. Since we are only at the start of the revolution, the answers are not clear, but NBEET takes the issue seriously enough to be funding a project to look at the impact of technology on language teaching from the year 2000.

This article looks at some of the promises, as well as the limitations that the real world places on imagination. Inevitably, although languages have demands of their own — not just accents but an extraordinary range of scripts, not all of them written left to right or top to bottom — many of the questions are the same as those confronted by any user of the technology. We are all dependent on the capacity of the delivery systems — work-stations and networks — and all face the same challenges of instructional design. Languages, however, offer a good test of the technology because they are interested in the strongest possible form of interactivity. Authentic conversation is needed if an adequate level of proficiency is to be achieved, so a complete computer-based language program ideally would have to solve the natural language problem. Still, even if real-life conversation with computers in a variety of languages is some way off, the shift from text to multimedia has opened up a variety of exciting possibilities.

Teaching programs

Since massive levels of source language input are desirable, and since the computer can handle student work tirelessly, even the previous technology had great potential. The arrival of video on the computer screen is a significant advance, since it adds the dimension of the visual to the purely verbal elements available in the language laboratory. One obvious development that this supports is aural comprehension of authentic material, with the program evaluating the students' written or, more challengingly, oral answers.

In terms of the material available, the market is already producing commercial CD-ROM titles in abundance and the range is bound to expand, particularly once disks can accommodate the longest films. Advanced nations are not going to want to be excluded from the field, so we can expect increasing numbers of titles in at least the dominant languages that refuse to abandon the field to English.

The new formats might increasingly replace some books on the syllabus: encyclopaedias on CD-ROM, for example, could provide the base for exercises that call on students' reading skills at the same time as they provide cultural information. Similarly, one can imagine students increasingly browsing a multi-lingual World Wide Web, and establishing international email exchanges in the class-room in real time in an authentically communicative setting. Better still, even if computers cannot yet converse, they could make possible regular desktop video conferencing with overseas students who might themselves be learning English.

Satellite television is also increasingly providing direct transmissions from the target country. This is not, in itself, a revolution since news broadcasts are already available on SBS from a limited range of countries, but it will increase access to different cultures and to a variety of expressions of those cultures. Such authentic material is linguistically demanding — the ability to understand a television broadcast perfectly is a significant achievement in itself — but it has the great advantage of delivering both language and culture in one integrated package.

All the same, before we get carried away, we have to realise that there already is a lot of material available to any student, in the shape of SBS radio and television, films, books, magazines and newspapers — not to mention local communities who speak the language. The problem is not to provide input, useful as that may be, but to help students to learn from it effectively. We do not need more magazines unread, more audio cassettes unlistened to or videos unwatched gathering dust in language laboratories. Raw material does not incorporate itself by magic into a structured teaching program. So the task for expert teachers will continue to be to turn it into a useful learning experience.

An example case: *Theater Interaktiv* CD-ROM

A CAUT grant of $50 000 in 1995 funded the production of a CD-ROM entitled *Theater Interaktiv*. The project was useful in providing a good idea of what is possible, but also in bringing home the real costs.

The course provides 50-80 hours of productive and challenging work for advanced German, in the context of a controversial theatre text (Felix, 1995). The materials reflect a holistic approach to language teaching, and bring together language, literature and culture in one flexible resource. The goal was to exploit the potential of multimedia applications to provide as rich a supplement as possible to best practice classroom teaching, to allow for different learning styles and abilities, and to provide a positive learning climate. The materials are meant to teach students more language (vocabulary, grammar, register), to give them biographical, thematic and stylistic information about the author and the play, and to provide the geographical, historical and philosophical setting to the play. The CD-ROM contains animated tutorials linked to extensive language exercises and video clips, a glossary linked to several games and a repertoire of culturally relevant items in a variety of multimedia presentations.

The program differs from commercially available CD-ROMs for language teaching in that it was conceived by the academic teaching the course in response to student need. It is aimed at advanced language learners, it uses the target language exclusively, it brings together language and literature, and includes a large variety of written exercises with appropriate feedback. The CD-ROM is personalised in that both teacher and students appear on screen. It offers a choice of musical backgrounds to lengthy exercises, it switches between games and serious work, and provides a meaningful context for every exercise attempted

This turned out to be an ambitious project which exceeded the person-hour costs covered by the CAUT grant by well over 500 per cent. It was successfully finished only because everyone working on the project put in vastly more hours than could reasonably be expected, because the staff involved were determined to complete it, and because the programmers found the project challenging and innovative. To give an example of the workload, 500 hours were spent by the academic and 300 by a research assistant when eight hours teaching relief per week for two semesters had been funded by CAUT. In this context, it is not surprising if projects of this sort either do not get finished or are forced to trim their original ambitions.

The *Theater Interaktiv* project had originally been even more ambitious, since the aim had been to provide a French version as well, and to produce a shell that could be used by other languages. There was nothing wrong with this idea but execution was severely restricted by the lack of funding. While it would be possible to add in the French raw materials within the budget, it would be difficult, if not impossible, to integrate them fully into the very complicated program (authored in Macromedia Director) without further injections of time and money.

The attractive approach of providing a shell which simply allows text to be inserted in the appropriate place is feasible as long as simple authoring tools are used and the program is restricted to a limited range of exercises. The production of sophisticated and pedagogically well designed programs is another matter. Apart from anything else, the more the program is designed for a real need, the less adaptable it risks being for different needs in different circumstances. Even if exactly the same exercises could be used for all languages, there would still be substantial work involved in changing all instructions and help screens to the new target language, recording and digitising videos, and preparing new texts and exercises. Even simple changes to the menu system, screens or buttons require programming knowledge and funds for programming time.

Nonetheless, despite the problems, the creation of shells that can be used by others seems the most sensible approach. Individual creativity may be restricted along with the ability to focus on particular needs, but any other approach is likely to be too expensive to be practical.

Limitations: expertise

One of the critical questions posed by the technology is where the staff are going to come from who will be able to use it. Fifteen years of work on computers has not led to any widespread development of Computer Assisted Language Learning (CALL), even though the field is well enough established to have its own acronym, learned societies and international journals. One obstacle has been hardware and system incompatibilities, which continue to inhibit co-operation between PC and Macintosh sites, but the major obstacle has been lack of programming expertise. Language scholars are not typ-

ically trained in computing, and do not often have the time to acquire the required expertise. As a result, CALL has sometimes been the domain of the enthusiastic hobbyist, all too often frustrated by the lack of interest shown by colleagues. However useful amateur programs written in spaghetti BASIC might be while their author is around to look after them, the work is unlikely ever to have more than local importance. Even if good, simple authoring systems, shells and templates had been readily available, so that all a language professional would have needed to do was to add appropriate course content, it is not clear that CALL would have spread much further in the 1980s than it did.

One limitation may have been the temptation to take the easy road and write variations on drill and practice for beginners' courses, with little available for upper level studies and not much that goes beyond simple grammar. Given the increasing focus on communicative skills in language learning, the computer has not had an easy time making itself indispensable. It is true that computer-based exercises have increasingly been provided with commercial text-books, but these, too, have tended to be simple drill and practice exercises, and there has been a problem of incorporating them fully into courses: exercises that students can do in their free time are likely to fall foul of the sad rule that what is voluntary does not get done, and it is not always easy to incorporate them into a computer-managed program that will at least mark and record the results.

The new multimedia technology offers greater promise but it also has greater difficulties than the simpler CALL programs. Multimedia authoring tools look fiendishly complicated to the lay person and IMM is even less a field in which hobbyists are likely to achieve much. Since the level of expertise required is so much higher now, the staff problem is correspondingly greater: the question has become one of bringing together quite extensive teams with the necessary range of technical, design and pedagogical expertise (expertise in copyright law would not be amiss). Some universities are advertising for instructional designers and staff with expertise in multimedia, but this is far from universal, and languages will not necessarily be the first beneficiaries of such investments even though at least a handful of groups in Australian universities are now working on innovative language projects.

More limitations: labour and equipment costs

One of the complaints about language teaching is that it is expensive: the Relative Funding Model allots 60 per cent more money to languages than to cheap Arts, and it is understandable if staff groaning under student/staff ratios of 20/1 look enviously at ratios of 12.5/1 in the languages.

From inside the languages, the situation is not so rosy: small departments with no access to economies of scale can be demanding places in which to work, and the extra funding does not go far to provide a quality environment for either students or staff, even within the limitations of standard university language courses. Of course, a high-quality (best practice?) learning environment — intensive full-time courses conducted entirely in the target language with small groups taught by a team including a native speaker — lies well beyond the bounds of fantasy.

Still, whether the perspective is reducing language budgets or using them more effectively, one of the hopes for the technology is naturally that it will help reduce costs and/or improve what is delivered. Indeed, given the expensive nature of interactive multimedia, it is hard to see why anybody should bother unless this hope can be fully realised.

However expensive networked audio-cassettes may be, the cost is dwarfed by laboratories with high-level multimedia work-stations networked to a file server massive enough to store hours of video. To make matters worse, not only are the set-up costs of the new technology higher, but the rate of obsolescence has also spurted. Audio-cassettes play on at the age of ten or more, but it is unlikely that the current generation of computers will survive for half that time. Such rapidly depreciating equipment needs to be used to the full (ideally, for every hour of the working day) for the costs to be recovered. More profoundly, of course, the teaching material delivered by the technology will need to be effective to justify the expenditure.

CAUT grants of $50,000 to create CD-ROMs are misleading. The suggestion from professionals is that $250,000 or more is required (a recently announced title *Indigenous Australians: an Aboriginal community focus* is reported to have taken four years to complete and to have cost $400,000). This is real money, since it would equip a whole multimedia laboratory, or fund an academic post for three to four years. Further, the expenditure has to be repeated since projects are subject to obsolescence. Language programs shot expensively on location for television can already seem dated less than ten years on: at a superficial level, clothes and hair-styles can make the characters look bizarre, but, at a deeper level, it may be that attitudes and cultural assumptions also seem out of date. Some material may be slow to change — grammatical structures persist, even if some vocabulary is liable to rapid evolution — but visual material, the most expensive to produce, is liable to rapid obsolescence.

Apart from the high cost of delivery, therefore, we also have to take into account the cost not only of creating the material but also of upgrading it. The total investment is liable to be so heavy as to make little sense unless the

end product can find a large market. For this reason, if language staff are to create their own programs, the sensible approach is a co-operative one, preferably across a large number of universities, to ensure that the end product is widely used. CAUT grants might sensibly be focussed in future, not on backing the enthusiasms of individuals, but on building on joint ventures that have real promise of being widely useful.

The creation of the Australian Technology Enhanced Language Learning consortium (ATELL) is a hopeful sign, but the big obstacle to co-operation is the desire to teach one's own material — a territorial imperative that is reinforced by load-based funding with its focus on ownership of courses and students. Whatever the reasons, not much of the work already done in CALL — not even the best of it — has penetrated beyond the home university of the creator, and even the more recent multimedia projects supported by CAUT have yet to spread despite the insistence on system-wide availability as a condition of the grant. The alternative future is for multimedia to be produced in the same way as commercial text-books that are aiming at a world-wide market. It will come of age when materials that language teachers can readily integrate into their courses can be bought off the shelf — whether that is in a university book shop or on the Net.

Flexible delivery

The new technology holds promise even if it is limited to timetabled classes in a single language laboratory on a single campus. However, it is hard to see the point of accepting limitations of this sort if we can reach beyond the boundaries of the laboratory. Even a reasonably sized laboratory is going to have difficulty coping with the demands for programmed class time and for private study just of the enrolled language students, and universities may be unable to find space and equipment for more and more laboratories. The hope, therefore, is that the programs could expand campus-wide, and beyond that out to the world at large.

Multi-campus universities have strong reasons to look for ways of making courses available on all their campuses without multiplying departments on every site. In any case, in a world where the traditional full-time student seems an increasingly endangered species, even single-campus universities need to ask how they can best meet the needs of people who may no longer be able to get to timetabled classes. In addition, student-controlled self-paced learning in a choice of learning styles is clamouring for attention. Apart from the prospect of a richer learning experience then, the promise is greater flexibility, greater choice and greater student control.

The attractive first step would be to allow students at any work station (including, increasingly, privately owned portables) access to courses on the campus network. The obstacles to this are inadequate machines, a lack of storage and the state of the network.

In a world where low-powered machines are still common, campus-wide distribution of multimedia may seem a fantasy, but the hardware problem is self-cancelling: old machines have to be replaced, inevitably by new standard configurations with a capacity for multimedia and the power to deliver high quality video (language teaching requires perfect lip synchronisation). A more serious concern is the enormous amount of storage that is going to be required: a couple of years ago, a two gigabyte file server sounded impressive but it is orders of magnitude too small for large amounts of video. A further limitation is the state of university networks, either because of insufficient bandwidth or because of switches that cannot handle high-volume traffic. Given the costs of upgrading networks, the dedicated laboratory might seem to have attractions since networking and storage can be dealt with at a domestic level, but in reality it is unlikely that any university can afford not to develop its networks, and that rather urgently.

The challenges get bigger beyond the campus. In a world where many students enrol part-time and where many full-time students have part-time jobs, the pressure will be for students to log on from home. Universities have provided off-campus access for years, and some courses are already available on the Net. Even the weakest link in the communications chain — the domestic telephone line — may be able to deal with text-based information with some graphics. For IMM to be possible, however, much greater bandwidth will have to be brought into the home. Here the great hope is presumably not just the pressure on Telstra to improve AARNet but the spread of satellite technology and the push for Telstra and Optus to bring fibre optic down every street to provide for interactive television — and not just the cables, but the switches that are going to be needed if full service networks are to be supported. Even so, the Virtual University delivering video to the screen on our desks at home remains a distant prospect.

Before we reach this point, an intermediate step will be taken. Across Australia, universities are developing high capacity campus networks with cable or microwave links into regional hubs which should increasingly make it possible for courses to be delivered to students on any campus within the region. While this is a long way short of the University on the desk at home, it is still a big step away from the University confined to the home campus.

Flexible delivery and languages of low demand

Australian universities teach a large number of small languages: the figures in Baldauf (1995) suggest that the smallest 30 languages share a total of under 150 EFTSU.

This structure is unplanned, irrational and vulnerable and seems ready made for the new technology. After all, it is unlikely that all potential students of Lao either live in Canberra or are able to move to Canberra to enrol at the ANU, so it seems only sensible that, if enrolments are to be maximised and languages given the best chance of reaching viability, they need to be available in every state, and preferably on every campus. Traditional distance education, largely print-based but with some audio and video material, is one way of reaching out to the market, but the new technologies offer the prospect of higher quality and more effective delivery.

Sadly, however, if the theoretical desirability is obvious, so are the practical difficulties, not so much technological as financial. The trouble with languages of low demand, evidently, is that not many students want to enrol in them. This inevitably raises the harsh question whether any investment in multimedia can ever recover its costs.

A rough calculation: a CD-ROM costing $250,000 would need to be delivered to 50 EFTSU to cover its costs, assuming that each EFTSU earns $5,000. If the life of the material is five years, then the required enrolment is ten EFTSU a year. This calculation is almost certainly optimistic, since it ignores the other costs of delivering the course — marking, administration and examinations for example, let alone technical support — which might cut substantially the income per EFTSU available to pay off the investment. If only $2 500 per EFTSU is available to cover production costs, then the target enrolment would be twenty EFTSU a year. (If we also worry about the quality of such disembodied education, then the income available will be cut still further). Still, even assuming that these targets are realistic, half of all the languages currently taught might easily not be able to attract ten EFTSU a year for five years. Twenty three languages had fewer than ten EFTSU in 1994 (the vast majority of those fewer than five EFTSU), and another four fewer than fifteen. It is true that these languages are offered only at one university, or in a few cases two, and that not all of them operate in distance mode, so the enrolments reflect a local market. We cannot therefore rule out the existence of a sufficiently large national market to fund the investment, but it is difficult to be optimistic about national demand if, for example, a city as large as Melbourne can attract only two EFTSU to Cambodian.

In other words, the most expensive forms of the technology may turn out to be a mirage for precisely those languages for which it seems most needed and most appropriate. The only plausible way of escaping the dilemma may be special Commonwealth funding. Alternatively, some entrepreneurial spirit could try selling to the world-wide market, or, more prudently, buying from it.

In practice, the benefits of flexible delivery might be more easily attainable by the half dozen languages which have enrolments between ten and twenty-five EFTSU as well as the five with enrolments from 50 to 100 EFTSU. Small languages established on several sites (say four to ten) might realise the futility of teaching unaided across the whole range of studies, and feel the attractions of a co-operative model (a Virtual National School of Korean, for example, which may already be there in embryo). Such a model could allow the exchange of specialist topics, giving staff an opportunity to build on their particular expertise and to teach much larger groups of students, while giving students access to a more diverse range of topics than even the hardest working handful of academics could provide. Further, since even the largest languages are taught in small departments (a third of all Japanese departments, even, have under 40 EFTSU), the benefits could extend all the way through the system.

Conclusion

It is easy to be carried away by enthusiasm, but there are real questions about the costs and implications of the new technology. Not everybody is a dreamer of dreams, and some may see this all as a nightmarish waste of scarce resources. Unfortunately for those who prefer to do nothing, an equally insistent question demands an answer — whether universities can afford to opt out, and what sort of future they can expect if they seek to specialise in face-to-face teaching.

It is certain that the delivery systems are coming even if they are not already here: high capacity campus networks are a reality, and higher capacity national and international networks are inevitable. In terms of course design, since universities with a commitment to distance education can hardly avoid the imperative and multi-campus universities will feel the pressure too, it is inevitable that domestic competition will grow.

A university that can deliver programs across its campuses can equally deliver them across the nation, or across the world. As more programs become available – – many of them from outside Australia as countries like Canada set up their own virtual universities — the risk is that students will desert the abstaining institutions, with consequences that will not for ever be warded off by the cosy way that DEETYA allocates each university a ration of EFTSU with dollars to match. Already, predictions are being made that the Australian graduates of the future will routinely count overseas topics for credit in their degrees. Competition might be even sharper than this, though, since the emerging technologies have the capacity to eat away the privileged monopoly of the whole university system. Even if the apocalyptic views about Future University Learning in Bonner (1995) are presented as technologically feasible hypothetical sce-

narios, rather than predictions (p.37), the logic of the technology points to the rapid marginalisation of Luddite institutions. The safest, as well as the most exciting strategy, must be to join the pioneers, with an eye as much attuned to the promise, as to the threat, of the technology.

References

Baldauf R.1995, *Viability of low candidature LOTE courses in universities*, Canberra, AGPS.

Bonner R.F., Berry, A., Marjonovic, O.,1995, 'Distributed multimedia university: from vision to reality', in Pearce J.M., Ellis A., Hart G. and McNaught C., 1995, *Learning with technology*, Proceedings of the twelfth annual conference of the Australian Society for Computers in Learning in Tertiary Education, Parkville, University of Melbourne.

Felix, U. 1995, '*Theater Interactiv*: multimedia integration of language and literature', *On-CALL*, 9 (3), pp. 12-17.

Pearce J.M., Ellis A., Hart G. and McNaught C., 1995, *Learning with technology*, Proceedings of the twelfth annual conference of the Australian Society for Computers in Learning in Tertiary Education, Parkville, University of Melbourne.